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Title: Los Alamos National Laboratory Spent Fuel Waste Disposition (SFWD)  
Quality Assurance (QA) Assessment Report Rev. 0

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**Los Alamos National Laboratory**

**Spent Fuel Waste Disposition (SFWD)**

**Quality Assurance (QA) Assessment Report**

**Rev. 0**

April 19, 2021

## **1. ASSESSMENT PURPOSE & SCOPE**

An internal assessment was conducted of the Los Alamos National Laboratory (LANL) work activities, as required to complete the FY21 Spent Fuel and Waste Disposition (SFWD) Program Level 4 Milestone M4SF-21LA010802012 - Summary Report of QA Assessment conducted on LANL SFWD work packages. It assessed the SFWD activities at LANL to verify the LANL implementation of the requirements of the *NFCSC Quality Assurance Program Document*, Revision 6. The source document for the evaluation is CNP-NFCSC-QAPP-001, Rev 4, *LANL NFCSC Quality Assurance Program Plan*, March 2020. This assessment was performed April 12-15, 2021 by reviewing program documentation, training records, implementation records, and discussion with the LANL QA Point of Contact (POC) and LANL SFWD Work Package Managers (WPMs). The evaluation does not include a review of the ASME NQA-1-2008/1a-2009 Addenda criteria.

## **2. EXECUTIVE SUMMARY**

The LANL NFCSC QAPP Rev. 4 addresses the organization, roles, and responsibilities for the maintenance and implementation of the NE-4 NFCSC QAPD. The results of this assessment concluded that the LANL NFCSC QAPP is effectively and satisfactorily implementing the NE-4 NFCSC program, with the exceptions noted in the assessment report.

The QAPP addresses Quality Rigor Levels (QRLs), training requirements, and implementation requirements. Documents are reviewed, approved, and uploaded in the Review & Approval System for Scientific and Technical Information (RASSTI), the LANL Records Management System. P1020-1, *Laboratory Records Management*, Rev. 13, effective 9/25/20, details the process for controlling and maintaining records.

This assessment is a follow up to the FY20 SFWD Assessment and verified that previous concerns and recommendations were satisfactorily addressed via personal correspondence from the LANL QA POC to the parties involved.

The implementation of LANL SFWD activities is satisfactory. The assessment resulted in one finding, two observations, and two opportunities for improvement. See Section 4 for details.

## **3. ASSESSMENT TEAM**

This assessment was conducted by John Dunwoody, LANL Lead Assessor, and Emily Wilson, PNNL Assessor.

## **4. ASSESSMENT RESULTS**

The assessment was conducted April 12-15, 2020 in virtual meetings with assessors and participants at LANL and PNNL due to the ongoing COVID-19 pandemic. This evaluation was performed by reviewing program documentation uploaded to DOE PICS:NE,

v2.4.45, SFWD training records, and program implementation records. The evaluation was conducted on FY20 - FY21 milestone activities performed from June 12, 2020 through April 12, 2021. A total of 10 completed FY20 SFWD and one FY21 milestone activities were available for review.

The details of the results are documented in the SFWD QA Checklist (See Attachment 1).

The assessment reviewed completed work package milestones to verify appropriate Quality Rigor Level (QRL) assignments and associated peer and/or technical reviews were conducted, by reviewing the uploaded documentation into the PICS: NE database. Also, the assessment verified that required training had been effectively implemented. Documentation and records were reviewed to ensure they were complete, easily retrievable and submitted to the laboratory's record system per LANL procedure P1020-1, *Laboratory Records Management*. Lastly, the assessment verified that NFCSC QAPD, Appendix E cover sheets and/or PICS: NE Deliverable Forms were used, that they were the correct revision, properly completed, and that they were included in the laboratory's record system.

One finding, two observations, and two Opportunity for Improvements (OFIs) were identified in this assessment:

**Finding 1:** One deliverable was submitted to PICS:NE without the Appendix E form. A technical review was acknowledged, and the reviewer was identified on the PICS:NE submission page, which meets the NFCSC QAPD requirements. However, the LANL QAPP requires technical reviewer signature on the Appendix E Form. A notification email was sent to the Work Package Manager (WPM) upon finding.

**Observation 1:** Two QRL-3 deliverables and two QRL-4 deliverables indicated peer reviews performed; however, QRL-3 only requires that a technical review be performed, and QRL-4 deliverables do not require technical reviews. Additionally, the four Appendix E forms indicated that the work was performed to NQA-1. Typically, the selected program is DOE O 414.1. All deliverables were submitted by the same WPM, all were a collaborative effort with Sandia National Laboratory (SNL), and both the QRL-3 deliverables, as well as the QRL-4 deliverables were the result of a combination of two work package deliverables (see attachment) effectively constituting a single QRL-3 submission and a QRL-4 submission, each duplicated. Due to the complexity of the work involved, combination of work package submissions, and the inclusion of two national laboratories, this scenario

was downgraded from a Finding to an Observation for additional opportunity for discussion and explanation.

**Observation 2:** A WPM who had left and rejoined the project prior to October 2020 had not yet completed the annual NFCSC QA training. The LANL QA POC contacted the LANL Training Coordinator, who immediately added the WPM to the training list on April 15, 2021.

**Opportunity for Improvement 1:** Four deliverables were submitted to PICS:NE using Revision 3 of the Appendix E form. The current version of Appendix E is Revision 6. This is the first observed occurrence and is tied to the Observation listed above.

**Opportunity for Improvement 2:** The LANL document release number was not listed on the Appendix E form; however, it was listed on the report.

The objective evidence reviewed during the assessment is provided in the attachments below.

## 5. ASSESSMENT CONCLUSIONS

The overall conclusion of the assessment was that the LANL, has satisfactorily and effectively implemented a QA Program in compliance with the NFCSC QAPD, Revision 6 and CNP-NFCSC-QAPP-001, Rev 4, *LANL NFCSC Quality Assurance Program Plan*. Finding 1 was immediately addressed by the LANL QA POC and is awaiting action by the WPM. The observations and OFIs are for information of the assessed organization. There is no formal response required. The observations and OFIs will be followed up prior to the 2022 Level 4 milestone assessment activity through individual notifications, redistribution of the current Appendix E form, Revision 6, and a training presentation on the completion of the PICS:NE deliverable submission page, use of LANL ID, and completion of the Appendix E form, as requested by a WPM upon notification of concern.

## 6. ATTACHMENTS:

- Attachment 1, NFCSC Assessment Checklist, Rev. 2
- Attachment 2, FY 2020 and FY 2021 Milestones Reviewed

**Prepared by:**

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Attachment 1

NUCLEAR FUEL CYCLE AND SUPPLY CHAIN (NFCSC ASSESSMENT CHECKLIST, REV 2 (12-12-29))

Assessment Report Number: FY 2021 LANL SFWD QA Assessment Report, Rev. 0

QAPD Ref. Sect.	Quality Assurance Requirements	Sat	Unsat.	N/A	Verification Conducted
	<b>REQUIREMENT: 1 - PROGRAM</b>				
Section 1.1	Verify that your national laboratory conducting NFCSC work activities is maintaining its interface document, describing the application of their QA Program (including implementing procedures), in compliance with the latest issued NFCSC QAPD revision.	X	<input type="checkbox"/>	<input type="checkbox"/>	CNP-NFCSC-QAPP-001, Rev 4, LANL NFCSC Quality Assurance Program Plan, March 2020 implements NFCSC QAPD Rev. 6 issued October 2019
	<b>REQUIREMENT: 2 - TRAINING</b>				
Section 2.0, POC Responsibilities	Verify that personnel (work package managers and associated laboratory technical staff) have received the required training (which may include self-study).	X		<input type="checkbox"/>	Verified WPM and applicable staff have been trained. All WPMs on SFWD milestones were trained. One staff member who left and returned had not received training but did not affect deliverables reviewed in this assessment.  See Observation 2.
Section 3.0	<b>REQUIREMENT: 3 - QA REQUIREMENTS FOR WORK PERFORMED BY THE NATIONAL LABORATORIES</b>				
Section 3.1	<b>QUALITY RIGOR LEVEL 1 REQUIREMENTS</b>				
Section 3.1, Table 1.0	Verify activities are conducted in accordance with an established NQA-1- 2000 (or later version) quality assurance program.	<input type="checkbox"/>	<input type="checkbox"/>	X	No QRL-1 deliverables were submitted in FY2020 and FY2021.
Section 3.1, Table 1.0	Verify software design, development, and testing meets the requirements of NQA-1-2000 (or later version), for Design Control, and, Test Control. In addition, a work package may specify that the activities meet the requirements of NQA-1 Subpart 2.7 Quality Assurance Requirements for Computer Software for Nuclear Facility Applications.	<input type="checkbox"/>	<input type="checkbox"/>	X	No QRL-1 deliverables were submitted in FY2020 and FY2021.



Attachment 1

NUCLEAR FUEL CYCLE AND SUPPLY CHAIN (NFCSC ASSESSMENT CHECKLIST, REV 2 (12-12-29))

QAPD Ref. Sect.	Quality Assurance Requirements	Sat	Unsat.	N/A	Verification Conducted
Section 3.2	<b>QUALITY RIGOR LEVEL 2 REQUIREMENTS</b>				
Section 3.2, Table 2.0	Verify activities are conducted in accordance with the Laboratory's DOE-approved quality assurance program.	<input type="checkbox"/>	<input type="checkbox"/>	X	No QRL-2 deliverables were submitted in FY2020 and FY2021.
Section 3.2, Table 2.0	Verify that milestones / deliverables with a Quality Rigor Level 2 received a Peer Review in accordance with NFCSC QAPD Appendix C or a procedure that meets the requirements for Peer Review as specified in Appendix C of the NFCSC QAPD.	<input type="checkbox"/>	<input type="checkbox"/>	X	No QRL-2 deliverables were submitted in FY2020 and FY2021.
Section 3.3	<b>QUALITY RIGOR LEVEL 3 REQUIREMENTS</b>				
Section 3.3, Table 3.0	Verify activities are conducted in accordance with the Laboratory's DOE-approved quality assurance program.	X	<input type="checkbox"/>	<input type="checkbox"/>	See attached list of Work Packages Reviewed
Section 3.3, Table 3.0	Verify that milestones / deliverables with a Quality Rigor Level 3 received a technical review in accordance with NFCSC QAPD Appendix B of the NFCSC QAPD or a procedure that meets the requirements specified in Appendix B of the NFCSC QAPD.	X	<input type="checkbox"/>	<input type="checkbox"/>	See attached list of Work Packages Reviewed. All milestones/deliverables with a QRL-3 included technical reviews.
Section 3.4	<b>QUALITY RIGOR LEVEL 4 REQUIREMENTS</b>				
Section 3.4, Table 4.0	Verify that Laboratory QA requirements apply to the work activity and no additional NFCSC QA requirements (such as QRL-1/NQA-1, QRL-2 or QRL-3) are applied.	X	<input type="checkbox"/>	<input type="checkbox"/>	See attached list of Work Packages Reviewed
Section 3.4, Table 4.0	Verify, as applicable, that if a QRL-4 milestone / deliverable provides input to a final QRL-2 or QRL-3 milestone / deliverable, that a note was added in the "Comments" section on the Deliverable Form in PICS: NE, stating that review requirements (i.e., peer review, technical review, etc.) will be documented in the final QRL-2 or QRL-3 milestone / deliverable	<input type="checkbox"/>	<input type="checkbox"/>	X	N/A – none were identified during this review.
Section 6.0	<b>GENERAL IMPLEMENTATION REQUIREMENTS</b>				

Attachment 1

NUCLEAR FUEL CYCLE AND SUPPLY CHAIN (NFCSC ASSESSMENT CHECKLIST, REV 2 (12-12-29))

QAPD Ref. Sect.	Quality Assurance Requirements	Sat	Unsat.	N/A	Verification Conducted
Section 6.2	Verify that a QRL designation has been assigned to the milestone / deliverable that is associated with the work package.	X	<input type="checkbox"/>	<input type="checkbox"/>	All QRLs were assigned to milestones/ and deliverables.
Section 6.3	Verify that the QRL designation (associated to a particular milestone / deliverable) has been changed accordingly, if the work package has been changed.	<input type="checkbox"/>	<input type="checkbox"/>	X	N/A
Section 6.4	Verify that the QA requirements identified in a work package, including the designated Quality Rigor Level(s) are flowed down to other participants, contractors and/or subcontractors through the appropriate contractual or work control process.	<input type="checkbox"/>	<input type="checkbox"/>	X	N/A
Section 6.6	Verify records are controlled and maintained at your national laboratory site, using each lab's record management system and procedures.	X	<input type="checkbox"/>	<input type="checkbox"/>	Records are controlled using Records Procedure P1020-1, <i>Laboratory Records Management</i> , Rev. 13.
Section 6.10	Verify each deliverable having a QRL-1, -2, -3 or -4 designation, includes a standardized Document Cover Sheet (Appendix E). If the PICS: NE system permits, complete information entered into the PICS: NE Deliverable Form, and listing the names of all reviewers, satisfies this requirement, including the requirement for signatures on the Document Cover Sheet (Appendix E).		X	<input type="checkbox"/>	See attached List of Work Packages Reviewed See Finding 1.
Appendix A	If applicable, verify the NFCSC Nuclear Data activities meet the requirements established in Appendix A of the NFCSC QAPD.	<input type="checkbox"/>	<input type="checkbox"/>	X	N/A
Appendix D	If applicable, verify NEUP University assessment work completed during the year, meets the requirements of Appendix D of the NFCSC QAPD.	<input type="checkbox"/>	<input type="checkbox"/>	X	N/A

**Attachment 2  
FY 2020 Milestones Reviewed**

<b>Milestone</b>	<b>Title</b>	<b>Date Completed</b>	<b>QRL #</b>	<b>Comments</b>
<b>FY19 SFWD Completed Milestones</b>				
M3SF-20LA0103030102	Argillite Disposal R&D - LANL	6/17/20	QRL-3	LA-UR-20-24308 See Observation 1, OFI 1, OFI 2
M3SF-20LA010301061	Argillite International Collaborations - LANL	6/17/20	QRL-3	LA-UR-20-24308 (combined with previous milestone deliverable) See Observation 1, OFI 1, OFI 2
M4SF-20LA010302021	Experimental and Modeling Activities to Support Crystalline Disposal Activities	7/8/20	QRL-3	LA-UR-20-24944 See Finding 1
M3SF-20LA010303012	2020 LANL Contributions to the BATS Test in WIPP	8/29/20 Resubmitted per DOE HQ request on 9/1/20	QRL-3	Satisfactory LA-UR-20-26603
M3SF-20LA010303042	LANL Contributions to Salt International Activities: 2020	11/30/20	QRL-3	Satisfactory LA-UR-20-29681, carryover to M3SF-21LA010303021
M3SF-20LA010304022	Geologic Framework Models for Alluvial Basin Reference Case	7/31/20	QRL-3	Satisfactory LA-UR-20-25594
M4SF-20LA010305032	Direct Disposal of Dual Purpose Canisters – LANL	8/27/20	QRL-4	Satisfactory LA-UR-20-26547
M4SF-20LA010308011	Engineered Barrier System R&D – LANL	7/23/20	QRL-4	LA-UR-20-25330 See Observation 1, OFI, OFI 2
M4SF-20LA010308051	Engineered Barrier System International Collaborations – LANL	7/23/20	QRL-4	LA-UR-20-25330 (combined with previous milestone deliverable) See Observation 1, OFI 1, OFI 2
M4SF-20LA010802012	LANL SFWD QA Assessment Report	6/24/20	QRL-4	Satisfactory LA-UR-20-24565
M3SF-21LA010303021	LANL Contributions to Salt International Activities: 2020	11/30/20	QRL-3	Satisfactory LA-UR-20-29681, carryover submission of M3SF-20LA010303042

